

Avian Inventory Initial Results in Northern Colorado Plateau National Parks, 2001

Matthew J. Johnson

USGS Colorado Plateau Field Station/Northern Arizona University, Box 5614, Flagstaff, AZ 86001

26 October 2001

Four National Parks and Monuments in the Northern Colorado Plateau Network were surveyed for the presence of birds from mid May to mid July 2001. The Parks surveyed were: Cedar Breaks NM (CEBR), Fossil Butte NM (FOBU), Golden Spike NHS (GOSP), and Timpanogos Cave NM (TICA). The primary objective of the study was to provide a baseline inventory of avifauna in each park with the goal of documenting 90% of species present. A secondary aim is to determine general abundance and distribution of species present, identifying park-specific species of special concern.

METHODS

The primary sampling method across all park units were Variable circular plot (VCP) counts where the objective is to correlate bird data to vegetation or other habitat information, and determine species richness, abundance and density. In the case of VCP sampling, the observer stands at a sampling station and records the horizontal distance between the observer and the bird. Depending on stand size and shape, point count stations will be located 250 m apart in each habitat type. Between each habitat type a 200 m buffer was implemented. Three to four visits were conducted to cover the period in which the greatest number of passerine bird species would be exhibiting breeding behavior, such as territorial calling and singing. Visits started at one-half hour after sunrise and completed by 1000 hours. At each station, one observer recorded all individual birds seen or heard for 7 minutes with counting subdivided into 3 periods: 0-3 minutes, 3-5 minutes and 5-7 minutes. Bird detections were recorded to the nearest meter. Laser rangefinders were used to estimate distance. These rangefinders can measure distances to rocks or trees where birds are detected within 1% accuracy. Flyover species were recorded in the same time periods, but with no estimates of distance. Additional notes were taken regarding whether detections were songs, calls, or other (e.g., drumming wings), whether the detection was aural, visual, or both, and whether the bird was detected at a previous point count station to avoid double-counting individuals. Birds flushed while walking between point count stations were counted as additional observations. Field sheets were modeled after those recommended by Ralph et al. (1995).

In addition to point count surveys, area search surveys of all habitats during breeding were also completed to increase the chance of detecting rare and secretive species that occur in the park units and are not detected during point count surveys. Personnel went to the different habitats where point count surveys have been established and recorded all species they saw or heard. These surveys were conducted in conjunction with the standard survey protocol (i.e., point counts) during the breeding season.

Crepuscular and nocturnal birds (i.e., owls, poorwills) were also surveyed using taped broadcasts. These surveys were conducted in all habitats that may be occupied by crepuscular and nocturnal species or where historical sightings have been noted. Tape broadcasts and vocalizations were conducted for 15 minutes at each designated point. Survey times were between 1 hour after sunset and 1 hour before sunrise. We conducted at least 2 surveys in each park. Survey data included species encountered, habitat, location, dates, and evidence of breeding status (i.e., courtship behavior, nests).

Attempts were made to survey areas where less common species had been reported, as determined through records held by the park or Division of Wildlife, or from anecdotal species accounts.

At Fossil Butte and Cedar Breaks, habitat within the park was stratified according to slope, elevation and aspect. Random points were generated within each habitat type. Points were selected for accessibility and survey-ability. Those points which fell on a steep, inaccessible slope were moved whenever possible to nearby, contiguous terrain. Habitat and vegetation data were collected for each plot on a standardized form and GPS coordinates were recorded at each point.

All road-kills and other specimens found dead were collected whenever feasible and frozen. Individual voucher specimens have been delivered to Northern Arizona University for processing.

Winter Surveys and Annual Report

We will conduct at least 2 visits to each park this winter to continue collecting and assessing information in park files. The annual FY01 report will be provided to the network office by 15 January 2002.

RESULTS

Parks were visited between 15 May through 15 August on at least three occasions during the 2001 field season, and up to a maximum of five visits. Due to the short spring and summer seasons of the higher altitude parks, CEBR, TICA and FOBU, visits to these parks did not start until late May or early June.

Cedar Breaks NM (CEBR)

Efforts at CEBR resulted in detecting 474 birds of 37 species during point count surveys and 115 birds of 39 species during area search surveys. Eight additional species were detected during area search surveys. No U.S. Fish and Wildlife Service (USFWS) species of concern were detected, however, 1 State of Utah species of concern was detected; Three-toed Woodpecker (*Picoides tridactylus*)

During 2001 breeding season, 84 point count surveys were carried out in 2 main habitat types mix-conifer and riparian and 15 additional area search surveys were also completed. 6 crepuscular and nighttime owl surveys were also completed, however, no

species were detected during these surveys. Species lists for each park were generated (Table 1, 1a).

Table 1. Bird species detected during point count surveys at Cedar Breaks National Monument, May – July 2001.

Rank	Species	Frequency	Percent
1	American Robin AMRO	46	9.7
2	Hermit Thrush HETH	45	9.5
3	Dark-eyed Junco DEJU	42	8.9
4	Mountain Chickadee MOCH	41	8.6
5	Yellow-rumped Warbler YRWA	36	7.6
6	White-crowned Sparrow WCSP	33	7.0
7	Chipping Sparrow CHSP	28	5.9
8	Western Tanager WETA	19	4.0
9	Three-toed Woodpecker TTWO	17	3.6
10	Cordilleran Flycatcher COFL	16	3.4
10	Ruby-crowned Kinglet RCKI	16	3.4
11	Pine Siskin PISI	15	3.2
12	Clark's Nutcracker CLNU	13	2.7
13	Black-throated Hummingbird BTHU	11	2.3
13	Harry Woodpecker HAWO	11	2.3
13	Townsend's Solitaire TOSO	11	2.3
15	Cassin's Finch CAFI	9	1.9
16	Western Bluebird WEBL	8	1.7
17	Lincoln Sparrow LISP	6	1.3
17	Northern Flicker NOFL	6	1.3
17	Steller's Jay STJA	6	1.3
18	Mountain Bluebird MOBL	5	1.1
18	Red-breasted Nuthatch RBNU	5	1.1
18	Western-wood Pewee WEWO	5	1.1
19	White-breasted Nuthatch WBNU	3	0.6
20	Olive-sided Flycatcher OSFL	2	0.4
21	American Dipper AMDI	1	0.2
21	Black-capped Chickadee BCCH	1	0.2
21	Black-chinned Hummingbird BCHU	1	0.2
21	Common Raven CORA	1	0.2
21	Dusky Flycatcher DUFL	1	0.2
21	House Wren HOWR	1	0.2
21	MacGillivray's Warbler MGWA	1	0.2
21	Pygmy Nuthatch PYNU	1	0.2
21	Solitary Vireo SOVI	1	0.2
21	Vesper Sparrow VESP	1	0.2
21	Violet-green Swallow VGSW	1	0.2
	Unknown Woodpecker UNWO	4	0.8
	Unknown Hummingbird UNHU	2	0.4
	Unknown Kinglet UNKI	2	0.4
	Total Species 37	474	

Table 1a. Additional species observed during area search surveys at CEBR, May – July 2001.

Rank	Species	Frequency	
	Golden Eagle GOEA	1	
	Pygmy Owl PYOW	2	
	Cliff Swallow CLSW	5	

Table 1a cont.

Rank	Species	Frequency	
	Brown Creeper BRCR	1	
	Black-throated Gray Warbler BTGW	1	
	Grace's Warbler GRWA	1	
	Spotted Towhee SPTO	1	
	Evening Grosbeak EVGR	1	

Fossil Butte NM (FOBU)

During Point count surveys at Fossil Butte National Monument we detected 1011 birds of 57 species and 146 birds of 53 species during area search surveys. 6 additional species were detected during area search surveys and 1 species was detected during nighttime surveys. No U.S. Fish and Wildlife Service (USFWS) species of concern were detected.

Approximately 84 point count surveys were carried in 3 habitat types (sage, aspen and mix conifer) out during the field season. 15 additional area search surveys were also completed. Eight crepuscular and nighttime surveys were also completed. Species lists for each park were generated (Table 2, 2a, 2b).

Table 2. Bird species detected during point count surveys at Fossil Butte National Monument, May–July 2001.

Rank	Species	Frequency	% among Species
1	Vesper Sparrow VESP	173	17.2
2	Brewer's Sparrow BRSP	156	15.5
3	Warbling Vireo WAVI	79	7.9
4	Green-tailed Towhee GTTO	77	7.7
5	American Robin AMRO	44	4.4
6	Yellow-rumped Warbler YRWA	31	3.1
7	House Wren HOWR	28	2.8
8	Western Meadowlark WEME	26	2.6
9	Northern Flicker NOFL	23	2.3
10	Dusky Flycatcher DUFL	22	2.2
11	Black-billed Magpie BBMA	20	2.0
11	Black-headed Grosbeak BHGR	20	2.0
12	Brown-headed Cowbird BHCO	19	1.9
13	Common Raven CORA	17	1.7
13	Ruby-crowned Kinglet RCKI	17	1.7
15	Sage Thrasher SATH	16	1.6
15	Orange-crowned Warbler OCWA	16	1.6
15	Horned Lark HOLA	16	1.6
16	Western Tanager WETA	15	1.5
16	Yellow Warbler YEWA	15	1.5
17	Black-headed Grosbeak BHGR	13	1.3
18	Cassin's Finch CAFI	9	0.9
19	Mountain Chickadee MOCH	8	0.8
20	Tree Swallow TRSW	7	0.7
20	Rock Wren ROWR	7	0.7
20	White-crowned Sparrow WCSP	7	0.7

Table 2 cont.

Rank	Species	Frequency	% among Species
21	Red-tailed Hawk RTHA	6	0.6
21	Black-capped Chickadee BCCH	6	0.6
21	Cliff Swallow CLSW	6	0.6
21	Mountain Bluebird MOBL	6	0.6
21	MacGillivray's Warbler MGWA	6	0.6
22	Chipping Sparrow CHSP	5	0.5
22	Golden-crowned Kinglet GCKI	5	0.5
22	Spotted Towhee SPTO	5	0.5
22	Violet-green Swallow VGSW	5	0.5
23	Brewer's Blackbird BRBL	4	0.4
23	Gray Flycatcher GRFL	4	0.4
23	Hammond's Flycatcher HAFL	4	0.4
23	Red-napped Sapsucker RNSA	4	0.4
23	Sage Grouse SAGR	4	0.4
23	Morning Dove MODO	4	0.4
23	Say's Phoebe SAPH	4	0.4
24	American Kestrel MAKE	3	0.3
24	Clark's Nutcracker CLNU	3	0.3
25	Northern Harrier NOHA	2	0.2
25	Stealer's Jay STJA	2	0.2
25	Turkey Vulture TUVU	2	0.2
25	Western-wood Pewee WWPE	2	0.2
26	Sand-hilled Crane SHCR	1	0.1
26	Brown Creeper BRCR	1	0.1
26	Broad-tailed Hummingbird BTHU	1	0.1
26	California Gull CAGU	1	0.1
26	Cooper's Hawk COHA	1	0.1
26	Dark-eyed Junco DEJU	1	0.1
26	Lazuli Bunting LABU	1	0.1
26	Red-breasted Nuthatch RBHU	1	0.1
26	White-breasted Nuthatch WBNU	1	0.1
	Unknown Woodpecker UNWO	6	0.6
	Unknown Flycatcher UNFL	16	1.6
	Unknown Empidonax Flycatcher UNFL	2	0.2
	Unknown Swallow UNSW	2	0.2
	Unknown Warbler UNWA	2	0.2
	Unknown Sparrow UNSP	1	0.1
	Total Species 57	1011	

Table 2a. Additional species observed during area search surveys at FOBU, May – July 2001.

	Mallard MALL	1	
	Peregrine Falcon PEFA	1	
	Pygmy Nuthatch PYNU	1	
	Audubon Warbler AUWA	4	
	Solitary Vireo SOVI	1	
	Pine Siskin PISI	1	

Table 2b. Species observed during crepuscular and nighttime surveys at FOBU; May – July 2001.

	Common Poorwill COPO	1	
--	----------------------	---	--

Golden Spike NHS (GOSP)

During Point count surveys at Golden Spike National Historic Monument we detected 317 birds of 16 species and 119 birds of 44 species during area search surveys. 26 additional species were detected during area search surveys. 3 species were detected during crepuscular and nocturnal surveys. There were no U.S. Fish and Wildlife Service (USFWS) species of concern were detected, however, 4 State of Utah species of concern was detected: Peregrine Falcon (*Falco peregrinus anatum*), Burrowing Owl (*Athene cunicularia*), Short-eared Owl (*Asio flammeus*), and Sage Grouse (*Centrocercus urophasianus*).

Approximately 64 point count surveys were carried out during the field season in two habitat types, grassland/shrub and riparian. 8 additional area search surveys were also completed. 4 nighttime owl surveys were also completed. Species lists for each park were generated (Table 3, 3a, 3b).

Table 3. Bird species detected during point count surveys at Golden Spike National Historic Monument, May–July 2001.

Rank	Species	Frequency	% among Species
	Western Meadowlark WEME	101	31.7
	Lark Sparrow LASP	67	21.0
	Long-billed Curlew LBCU	45	14.1
	Rock Wren ROWR	22	6.9
	Brewer's Sparrow BRSP	21	6.6
	Horned Lark HOLA	20	6.3
	Morning Dove MODO	14	4.4
	Common Raven CORA	11	3.4
	Loggerhead Shrike LOSH	4	1.3
	Vesper Sparrow VESP	3	0.9
	Chucker CHUK	2	0.6
	Gray Partridge GRPA	2	0.6
	Sage Thrasher SATH	2	0.6
	Ring-necked Pheasant RNPH	1	0.3
	Brown-headed Cowbird BHCO	1	0.3
	Bullock's Oriole BUOR	1	0.3
	Total Species detected 16	317	100%

Table 3a. Additional species observed during area search surveys at GOSP, May – July 2001.

Species	Frequency	
Snowy Egret SOEG	1	
Great-blue Heron GBHE	1	
Canada Geese CAGE	1	
Mallard MALL	1	
Turkey Vulture TUVU	1	
Red-tailed Hawk RTHA	1	
Northern Harrier NOHA	1	
Peregrine Falcon PAFA	1	
American Kestrel MAKE	4	
Ring-necked Pheasant RNPH	1	
California Quail CAQU	1	
Sage Grouse SAGR	1	
Burrowing Owl BUOW	2	
Barn Swallow BASW	2	

Table 3a cont.

	Species	Frequency	
	Cliff Swallow CLSW	3	
	Canyon Wren CAWR	2	
	American Robin AMRO	2	
	Say's Phoebe SAPH	1	
	Western Kingbird WEKI	3	
	Yellow Warbler YEWA	1	
	Black-billed Magpie BBMA	3	
	Brewer's Blackbird BRBL	3	
	Spotted Towhee SPTO	1	
	Brewer's Sparrow BRSP	1	
	White-crowned Sparrow WCSP	1	
	House Finch HOFI	1	

Table 3b. Species observed during crepuscular and nighttime surveys at GOSP, May – July 2001.

	Species	Frequency	
	Short-eared Owl SEOW	2	
	Great-horned Owl GHOW	2	
	Common Nighthawk CONI	1	

Timpanogos Cave NM (TICA)

During Point count surveys at Timpanogos Cave National Monument we detected 367 birds of 51 species during area search surveys. Due to the limited area size of Timpanogos Cave point count surveys were not completed. No U.S. Fish and Wildlife Service (USFWS) species of concern or state of Utah species of concern were detected.

10 area search surveys were completed in 3 habitat types (oak, mix conifer, riparian) and 4 nighttime owl surveys were also completed. Species lists for each park were generated (Table 4).

Table 4. Bird species detected during area search surveys at Timpanogos Cave Historic Monument, May–July 2001.

Rank	Species	Frequency	Percent
1	Western Tanager WETA	37	10.0
2	Orange-crowned Sparrow OCSP	26	7.0
3	Broad-tailed Hummingbird BTHU	24	6.5
3	Warbling Vireo WAVI	24	6.5
4	Tree Swallow TRSW	17	4.6
5	Violet-green Swallow VGSW	15	4.1
6	American Robin AMRO	14	3.8
7	Yellow-rumped Warbler YRWA	13	3.5
8	Steller's Jay STJA	11	3.0
8	Black-headed Grosbeak BHGR	11	3.0
9	Virginia Warbler VIWA	10	2.7
9	Dark-eyed Junco DEJU	10	2.7
9	Cassin's Finch CAFI	10	2.7
10	Lazuli Bunting LABU	9	2.4
10	Mountain Chickadee MOCH	9	2.4
10	Chipping Sparrow CHSP	9	2.4
11	Clark's Nutcracker CLNU	8	2.2

Table 4 cont.

Rank	Species	Frequency	Percent
12	Cordilleran Flycatcher COFL	7	1.9
12	Townsend's Solitaire TOSO	7	1.9
12	Green-tailed Towhee GTTO	7	1.9
12	Pine Siskin PISI	7	1.9
13	Hermit Thrush HETH	6	1.6
13	Red-breasted Nuthatch RBNU	6	1.6
13	Spotted Towhee SPTO	6	1.6
14	White-throated Swift WTSW	5	1.4
14	Calliope Hummingbird CAHU	5	1.1
14	Hammond's Flycatcher HAFL	5	1.4
14	Ruby-crowned Kinglet RCKI	5	1.4
15	American Dipper AMDI	4	1.1
15	Golden-crowned Kinglet GCKI	4	1.1
15	MacGillivray's Warbler MGWA	4	1.1
16	Northern Flicker NOFL	3	0.8
16	Black-capped Chickadee BCCH	3	0.8
16	Canyon Wren CANW	3	0.8
17	Rock Wren ROWR	2	0.5
17	Swainson's Thrush SWTH	2	0.5
17	Black-throated Gray Warbler BTGW	2	0.5
17	Yellow Warbler YEWA	2	0.5
18	Golden Eagle GOEA	1	0.3
18	Red-tailed Hawk RTHA	1	0.3
18	Cooper's Hawk COHA	1	0.3
18	Sharp-shinned Hawk SSHA	1	0.3
18	Ruffed Grouse RUGR	1	0.3
18	Gray Flycatcher GRFL	1	0.3
18	Solitary Vireo SOVI	1	0.3
18	White-breasted Nuthatch WBNU	1	0.3
18	Pygmy Nuthatch PYNU	1	0.3
18	House Wren HOWR	1	0.3
18	Brewers Sparrow BRSP	1	0.3
18	American Goldfinch AMGO	1	0.3
	Unknown Accipiter UNAC	1	0.3
	Unknown Flycatcher UNFL	1	0.3
	Unknown Warbler UNWA	1	0.3
	Total Species 51	367	

